

Notice of Allowability

Application No.

09/978,035

Examiner

Cheryl Juska

Applicant(s)

SANO, NAOTO

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 09-29-03.
2. ☒ The allowed claim(s) is/are 35-38 and 41-50.
3. ☒ The drawings filed on 17 October 2001 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 08/577,474.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No. _____.
 - (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.
 - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1 <input type="checkbox"/> Notice of References Cited (PTO-892) | 2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 4 <input checked="" type="checkbox"/> Interview Summary (PTO-413), Paper No. _____ |
| 5 <input type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. _____ | 6 <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8 <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9 <input type="checkbox"/> Other |

Cheryl Juska
Primary Examiner
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EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Said examiner's amendment is made to correct the error in status language recited in the amendment of September 29, 2003. Specifically, for claims 1-34, the proper status is "cancelled," rather than "previously cancelled." Additionally, in claims 36 and 37 the proper status is "previously presented," rather than "previously added." The content of the claims is not being amended from applicant's amendment of September 29, 2003.
3. The application has been amended as follows:

1 -34. (Cancelled)

35. (Currently Amended) A method of manufacturing a projection exposure apparatus having a pulse laser, said method comprising the steps of:

measuring an optical performance of a projection optical system, by producing an interference fringe which bears information related to aberration of the projection optical system, by use of a harmonic of a laser having a coherency higher than that of a the pulse laser; and

~~then by analyzing~~ detecting the interference fringe,

wherein a wavelength of the harmonic of the laser corresponds to a ~~design wavelength of the projection optical system and also corresponds to a wavelength of light from the pulse laser.~~

36. (Previously Presented) A method according to claim 35, wherein the pulse laser comprises an excimer laser.

37. (Previously Presented) A method according to claim 36, wherein the excimer laser includes means for narrowing a bandwidth of the light and for changing the wavelength of the light.

38. (Currently Amended) A method of manufacturing a projection exposure apparatus having a KrF excimer laser, said method comprising the steps of:

measuring an optical performance of a projection optical system, by producing an interference fringe which bears information related to aberration of the projection optical system, by use of a harmonic of an Argon laser; ion laser; and

~~then by analyzing detecting~~ the interference fringe,

wherein a wavelength of the harmonic of the Argon ion laser corresponds to a ~~design~~ wavelength of the projection optical system and also corresponds to a wavelength of light from the KrF excimer laser.

39. (Cancelled)

40. (Cancelled)

41. (New) A method according to claim 38, wherein the excimer laser includes means for narrowing a bandwidth of the light and for changing the wavelength of the light.

42. (New) A method of manufacturing a projection exposure apparatus having a pulse laser, said method comprising the steps of:

measuring an optical performance of a projection optical system, by producing an interference fringe which bears information related to aberration of the projection optical system, by use of a harmonic of a laser providing a continuous wave; and

detecting the interference fringe;

wherein a wavelength of the harmonic of the laser corresponds to a wavelength of light from the pulse laser.

43. (New) A method according to claim 42, wherein the pulse laser comprises an excimer laser.

44. (New) A method according to claim 43, wherein the excimer laser includes means for narrowing a bandwidth of the light and for changing the wavelength of the light.

45. (New) In a method of manufacturing a projection exposure apparatus having a KrF excimer laser, the improvement comprising:

measuring an optical performance of a projection optical system, by producing an interference fringe which bears information related to aberration of the projection optical system, by use of a secondary harmonic of a laser having a wavelength of 494.5 nm,

wherein a wavelength of the harmonic of the laser corresponds to a wavelength of light from the KrF excimer laser.

46. (New) A method according to claim 45, wherein the excimer laser includes means for narrowing a bandwidth of the light and for changing the wavelength of the light.

47. (New) A method according to claim 35, further comprising adjusting the projection optical system in accordance with a result of the detection of the interference fringe.

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48. (New) A method according to claim 38, further comprising adjusting the projection optical system in accordance with a result of the detection of the interference fringe.

49. (New) A method according to claim 42, further comprising adjusting the projection optical system in accordance with a result of the detection of the interference fringe.

50. (New) A method according to claim 45, further comprising adjusting the projection optical system in accordance with a result of the detection of the interference fringe.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Cheryl Juska whose telephone number is 703-305-4472. The Examiner can normally be reached on Monday-Friday 10am-6pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Terrel Morris can be reached on 703-308-2414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



CHERYL A. JUSKA
PRIMARY EXAMINER